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EXAMINER

WEDDLE, ALEXANDER MARION

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/558,153	<b>Applicant(s)</b> JENTGENS ET AL.	
	<b>Examiner</b> ALEXANDER WEDDLE	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 19-43 is/are pending in the application.
- 4a) Of the above claim(s) 43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 19-43 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/23/2005</u> .  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 19-42, drawn to a method of producing plastic-coated rovings.

Group II, claim(s) 43, drawn to an apparatus for coating rovings.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

3. Groups I and II lack unity of invention because even though the inventions of these groups require the technical feature of a method for coating a roving, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of Montsinger (WO 02/076706). WO'706 demonstrates that the process is not novel, because it discloses a method comprising a step of coating rovings with plastic in a coating device and a step of passing the coated rovings through a rotating device which twists the individual threads backward along the direction of the coating device.

4. During a telephone conversation with Charles Fallow on December 11, 2008 a provisional election was made without traverse to prosecute the invention of Group I, claims 19-42 . Affirmation of this election must be made by applicant in replying to this

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Office action. Claim 43 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Objections***

6. Claim 19 is objected to because of the following informalities: There appears to be a typographical error in line 10: ". . . there [] substantially no rotations . . ."

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 19, 20, 22, 40, and 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 19 recites the limitation "the individual threads" in line 7. There is insufficient antecedent basis for this limitation in the claim.

10. Claim 22 recites the limitation "the coating polymer, plastic, and mixtures thereof" in line 5. There is insufficient antecedent basis for this limitation in the claim.

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11. Claim 25 recites the limitation "said solid shaft" in line 2. There is insufficient antecedent basis for this limitation in the claim.

12. Claim 25 is unclear and indefinite, because it appears to describe the same shaft as both hollow and solid.

13. The term "thin" in claim 20 is a relative term which renders the claim indefinite. The term "thin" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

14. Claim 40 recites the limitation "said subsequent step of coating the rovings with a mineral compound" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

15. The term "great hardness" in claim 40 is a relative term which renders the claim indefinite. The term "great hardness" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

16. Claim 42 provides for the use of individual filaments, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

***Claim Rejections - 35 USC § 101***

17. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

18. Claim 42 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

***Claim Rejections - 35 USC § 102***

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

20. Claims 19-20, 36, 37, and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Boissonat et al. (US 5,451,355) and as evidenced by (WO 02/076706).

Regarding Claims 19 and 36, Boissonnat et al. (US'355) teach a process for producing plastic-coated fibers or rovings, consisting of substantially parallel filaments (Figs. 1 and 5, element 10; col. 5, lines 45-49), comprising the steps of coating rovings with plastic in a coating device (col. 5, lines 45-48), and then passing the coated rovings, on which the plastic coating is molten or liquid (col. 5, lines 55-57) through a rotating device (Fig. 5, element 19; col. 5, lines 63-65; col. 6, lines 4-5) which rotates the fibers to twist the individual threads together (col. 5, lines 63-65), in the form of rotations, starting from the rotating device, backward along the threads in the direction

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of the coating device (col. 6, lines 4-5). It is the Examiner's opinion that the resultant filaments will inherently be compressed by the torsion on the threads while twisting or rotating, as evidenced by Montsinger (WO 02/076706) at page 8, lines 18-21.

Regarding Claims 20 and 42, US'355 teaches the method as claimed in claim 19, wherein thin threads are produced and a method of using the individual filaments for producing threads (col. 3, lines 23-29; Example 1, col. 6, lines 59-68).

Regarding Claim 37, the fibers from which the rovings are formed may be carbon, glass, or plastic (col. 3, lines 5-7).

All limitations of Claims 19-20, 37, and 42 are therefore anticipated expressly or inherently.

21. Claim 41 is rejected under 35 U.S.C. 102(b) as being anticipated by Boissonat et al. (US 5,451,355).

Regarding Claim 41, Claim 41 is a product-by-process claim to a thread produced by the method taught by US'355, wherein the limitations of the product are fully met by the reference (col. 3, lines 23-29; Example 1, col. 6, lines 59-68).

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In *re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

All limitations of Claim 41 are therefore anticipated expressly or inherently.

22. Claims 19, 23, and 25-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Montsinger (WO 02/076706).

Regarding Claims 19 and 23, Montsinger (WO'706) teaches a method of producing compressed, plastic-coated fibers or rovings (p. 2, lines 24-29), consisting of substantially parallel ("unidirectionally aligned fibers") (p. 10, lines 13-19; Fig. 9, elements 12), comprising the steps of coating rovings with plastic in a coating device, then passing the coated rovings, or a plurality of coated rovings as a composite, consisting of substantially parallel filaments on which the plastic applied is present in a molten or liquid state, through a rotating device by means of which local rotation of the fibers is executed which twists the individual threads with one another in the form of rotations (p. 3, lines 11-12; p. 7 line 21 to p. 8, line 22; Fig. 3, 6, and 9, elements "Fiber," 12, 23, "Strand"). The rotation of the filaments by a rotating sizing die ("exit die") (Abstract; p. 6, lines 15-32) causes the threads to rotate backwards along the threads in the direction of the coating device (p. 7, line 32 to p. 8, line 3; Fig. 3, elements 12, and 15, 22); the rotating exit die sizes the filaments - i.e., regulates the amount of polymer that is pulled out of a die by the fiber (p. 6, lines 17-18). The rovings are compressed (page 8, lines 18-21).

Regarding Claim 25, WO'706 teaches the step of rotating the exit die about the axis of the filaments and/or rotating the fiber within the exit die, and apparently discloses a rotating sizing die fixed in a hollow shaft and rotated together with the hollow shaft (Fig. 3, 6, elements 22, 23, 24, 32; p. 6, line 25 to page 7, line 25).



Regarding Claims 26-28, WO'706 teaches that rotational speeds may vary from 0 to 10,000 rpm (p. 8, lines 6-7).

All limitations of Claims 19, 23 and 25-28 are therefore anticipated expressly or inherently.

23. Claims 19 and 35 are rejected under 35 U.S.C. 102(b) as anticipated by Eaton et al. (WO 02/087840) and as evidenced by Montsinger (WO 02/076706).

Regarding Claim 19, Eaton et al. (WO'840) teach a method of producing plastic-coated fibers or rovings ("tow") (Abstract), consisting of substantially parallel filaments (p. 3, lines 24-27), said method comprising steps of coating rovings with plastic in a coating device (p. 1, line 25 to p. 2, line 2) then passing the rovings coated with liquid plastic through a rotating device (Abstract; p. 1, line 25 to p. 2, line 2; p. 2, lines 15-21) which twists the individual threads with each device (p. 9, lines 8-14). It is the Examiner's opinion that the threads are inherently twisted backward along the threads in the direction of the coating.

Additionally, it is the Examiner's opinion that the resultant filaments will be inherently compressed by the torsion on the threads while twisting or rotating, as evidenced by Montsinger (WO 02/076706) at page 8, lines 18-21.

Regarding Claim 35, WO'840 teaches that the roving has 45-47 spiral revolutions ("turns" or "twists") per meter. Examiner believes that the limitation that the spiral revolutions inherently occur backward in the direction of the coating device, because of the angular stress or torsion placed on the roving.

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Every limitation of Claims 19 and 35 is therefore anticipated expressly or inherently.

***Claim Rejections - 35 USC § 103***

24. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

25. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

26. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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27. Claims 21 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boissonat et al. (US 5,451,355).

Regarding Claim 21, US'355 discloses that it was known in the art at the time of invention to apply the plastic onto the rovings as powder (col. 1, lines 31-35). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of US'355 by applying the plastic as powder, because a roving made with plastic powder can be used in braiding or weaving operations (col. 1, lines 40-41).

Regarding Claim 38, US'355 fails to teach that the thermoplastic material has a softening point of 100 degrees Celsius or higher. The softening point of a thermoplastic material is a result-effective variable, because at the time of the invention the person of ordinary skill in the art would have recognized that the softening point will affect the ability of the roving to withstand thermal and mechanical stresses. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'355 by determining the optimal properties of the thermoplastic material as a result of routine optimization.

Claims 21 and 38 are *prima facie* obvious absent evidence to the contrary.

28. Claims 22 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boissonat et al. (US 5,451,355) in view of Tsotsis (US 6,074,716).

Regarding Claims 22 and 40, US'355 further teaches allowing the roving ("thread") to become solidified before being wound onto a spindle (col. 6, lines 6-7).

US'355 further fails to teach coating the rovings with a material selected from the group

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consisting of mineral powders [and] metal powders. Examiner cannot comprehend the meaning of “in said subsequent step of coating the rovings with a mineral compound, compounds are applied which are selected from the group consisting of [inter alia] metal powders, substances of great hardness, [etc.].” Tsotsis (US’716) teaches a metal matrix impregnated tow composite material in which a roving of fibers is impregnated with metal powder (col. 2, lines 63-67). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US’355 by impregnating the molten coating plastic with metal powder, because US’716 teaches that metal powder lends a roving high mechanical and thermal properties and resistance to solvents (col. 2, lines 3-18).

Further regarding Claim 40, US’355 in view of US’716 fails to teach the average particle size of the metal powder. The particle size of metal powder is a result-effective variable, because it affects the packing density and thus the mechanical and solvent resistant properties of the roving. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US’355 in view of US’716 by determining the optimum particle size as a result of routine optimization.

Claims 22 and 40 are *prima facie* obvious absent evidence to the contrary.

29. Claims 24 and 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montsinger (WO 02/076706).

Regarding Claim 24, WO’706 teaches that rotational speeds may vary from 0 to 10,000 rpm (p. 8, lines 6-7). WO’706 fails to teach that the high speed will spin off all excess coating material at the die edge. It would have been obvious to a person of

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ordinary skill in the art at the time of invention to spin the die at a sufficiently high rotational speed to spin off all excess material at the die edge in order to prevent clogging of the die, promote uniform coating, to allow collection and recycling of coating material, and to maintain a clean die.

Regarding Claims 31-34, WO'706 teaches that the rotating exit die sizes the fiber (col. 6, lines 17-18). Further, the length/diameter ratio of the die may be varied from 0.01 to 1000 (p. 6, lines 31-32). WO'706 provides trial summary data in Table 1 with trial die diameters from 0.136 inches to 0.25 inches. WO'706 fails to teach the specific diameters recited in the claims. The internal diameter of the sizing die is a result-effective variable, because it is known in the prior art to affect the diameter of the resulting fibers. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify US'706 by determining an optimal internal diameter for the sizing die as a result of routine optimization.

Claims 24 and 31-34 are *prima facie* obvious absent evidence to the contrary.

30. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Montsinger (WO 02/076706) in view of Rhodes, Jr. et al. (US 5,326,524).

WO'706 further teaches that the polymer coating of the fiber is in a heated liquid state, but is silent as to whether the sizing die is heated to at least the melting point of the fiber coating (p.6, lines 10-32). Rhodes, Jr. et al. (US'524) teaches a method for making plastic rods reinforced with fiber rovings by rotating the fiber rovings before entering a heated die (col. 6, lines 51-62). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of WO'706 by

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heating the sizing die, because US'524 teaches that heated dies are suitable for coating rovings, and such person would have recognized the benefit of maintaining the fiber coating at its melting point to improve the flow of the fiber coating through the die and onto the fiber.

Claim 29 is *prima facie* obvious absent evidence to the contrary.

31. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Montsinger (WO 02/076706) in view of Schmidt et al. (US 2005/0051924).

US'706 teaches using a plurality of dies in parallel, but does not teach connecting a plurality of rotating sizing dies in series. Schmidt et al. (US'924) teaches a process of making extruded knit materials in a continuous manner by extruding three or more polymeric filaments into a functional knit material for bale wrap, cargo wrap and nets (Abstract). US'924 teaches that the rotary die assembly in series allows the extruded filaments to become intermingled and interlocked (Abstract). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of US'706 by substituting the rotary die assembly connected in series taught by US'924 for the parallel die assembly of US'706 to yield predictable results, because US'924 teaches that such an assembly is suitable to extrude continuous filaments of polymers such as those used in the process of US'924 and to vary the cross section of continuously extruded filaments (pars. 0033, 0034).

Claim 30 is therefore *prima facie* obvious absent evidence to the contrary.

32. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eaton et al. (WO 02/087840) in view of Staheli (US 6,838,123).

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WO'840 further teaches that the impregnating material may be a thermosetting plastics material (p. 1, lines 10-35; p. 5, lines 5-7), including vinyl ester, polyester or epoxy (p. 5, lines 18-20). WO'840 is silent as to the use of polycondensates and thermosetting polyadducts as thermosetting plastics. Staheli (US'123) teaches coating rovings with curable polycondensates and polyadducts (col. 3, lines 32-40). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify WO'840 by using a specific category of thermosetting plastic as taught by US'123, because US'123 teaches that such categories of thermosets are useful to give the rovings excellent mechanical properties (Abstract; Examples 1 and 2, col. 5, line 65 to col. 6, line 41).

WO'840 in view of US'123 fails to teach a method wherein the fibers are coated with at least one thermosetting polycondensate and at least one thermosetting polyadduct. However, it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.

Claim 39 is therefore *prima facie* obvious absent evidence to the contrary.

### **Conclusion**

33. No Claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER WEDDLE whose telephone number is (571) 270-5346. The examiner can normally be reached on Monday-Thursday, 7:30 AM - 5:00 PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. W./

Examiner, Art Unit 1792

/Michael Kornakov/

Supervisory Patent Examiner, Art Unit 1792